

REMARKS:

Claim Rejections Under 35 USC 103:

Claims 1-5, 8-10, and 16-17 were rejected under 35 USC 103(a) as being unpatentable over Miyamoto et al (US 6,203,431) in view of Van Hook et al. (US 6,342,892). Further, claims 6-7, 11-12, 14-15, and 18-19 were rejected under 35 USC 103(a) as being unpatentable over Miyamoto in view of Van Hook as applied to claim 1 above and further in view of Billyard et al. (US 5,579,454). Applicants have amended claims 1-19 and respectfully submit that all claims are patentably distinct from the cited references.

Applicants have amended claims 1-19 to address matters of form and to clarify the distinctions between the invention recited in the claims and the cited prior art references. Support for the amendment may be found throughout the specification, including at page 15, lines 23-29; page 15, line 30 through page 16, line 29; page 28, lines 3-14; and page 33, lines 3-22.

On page 2 of the office action the Examiner rejected claims 1-5, 8-10, 13, and 16-17, indicating that Miyamoto discloses generating a dummy of said object (col. 1, line 65- col. 2, line 7 and FIG. 8) and drawing said dummy object..... in a lightness different from that of said object (FIG. 20). Applicant respectfully submits, however, that even in combination with the other art of record, Miyamoto fails to teach or suggest all of the elements of claims 1-19.

Miyamoto teaches that the memory in the video game apparatus contains player object data, basic shadow object data, and light object data. Based upon a length of each leg of the player object and the height of the light, a length of the shadow is determined. Based on the height of each leg, a depth of the shadow is determined. Finally, a shape of the displaying shadow object is determined from a state of a ground object to which the shadow is thrown. (Abstract).

Although, Miyamoto teaches a player object, a basic shadow object, and generating and displaying a displaying shadow object, none of these teach or suggest the limitation of claim 1 of “generating a dummy object of said object by duplicating said object.” Instead, Miyamoto discloses only that the basic shadow object is in circular form, represented by two sets of polygons with data giving three steps of depth (transparency) degrees (col. 8, lines 21-34). Further, Miyamoto in FIG. 8

illustrates the basic shadow object as including a circle. FIG. 17 illustrates the changes in shape of the basic shadow object, changing from a circle to an ellipse with different elongations, depending on the height of the light. The final display includes “displaying shadow object data” generated from the basic shadow object. The shadows S1 and S2 shown in FIG. 20 are described merely as displayed shadows (col. 11, lines 40-44) with no indication that they are generated by duplicating an object such as the player object.

Thus, although Miyamoto discloses several manipulations of the basic shadow data to form the displayed shadow data, there is no teaching or suggestion that the basic shadow data (or any interim form) is formed by duplicating the object. That is, neither the basic shadow object, the player object, nor the displayed shadow object form a dummy object by duplicating an object. Instead, basic shadow objects such as the circles and ellipses of FIGS. 8, 16, 17 and 18 are shown.

Further, Miyamoto fails to teach that the lightness of the dummy object is drawn in a second lightness which is based on the lightness (i.e. the first lightness) of the object, as required by claim 1. Instead, Miyamoto teaches that the depth of the displayed shadow object, i.e., the depth of the shadow, is determined by dimensions relating to the player object.. Specifically, Miyamoto teaches that the depth of the displaying shadow object is determined based upon a height (h) of the leg (abstract). When the height (h) of the leg is high, the depth of the displaying object is set to be bright, and when the height of the leg is low, the depth of the displaying shadow object is set to be dark. The depth of the displaying shadow object is determined by changing the transparency of the displaying shadow object (see col. 11, lines 4-13). Thus, applicants submit that for at least this additional reason, Miyamoto fails to teach or suggest all of the limitations of claim 1.

Van Hook relates to a three dimensional graphic system having a z-buffer(see col. 9, lines 38-40). But Van Hook neither teaches nor suggests that the lightness of the dummy object is drawn in a second lightness which is based on the lightness (i.e. the first lightness) of the object, as required by claim 1. Nor does this reference teach or suggest the limitation of generating a dummy object of said object by duplicating said object. Claims 2-5 depend from claim 1 and are submitted to be patentable at least based upon this dependency. Claims 8, 13, 16 and 17 are submitted to be allowable for at least the same reasons as discussed above with respect to claim 1. Claims 9 and 10 depend from claim 8 and are submitted to be allowable at least due to

this dependency. Accordingly, applicants respectfully submit that none of claims 1-5, 8-10, 13, and 16-17 are unpatentably obvious in view of the combination of Miyamoto et al. and Van Hook et al.

Claims 6-7, 11-12, 14-15, and 18-19 were rejected under 35 USC 103(a) as being unpatentable over Miyamoto in view of Van Hook as applied to claim 1 above and further in view of Billyard et al. (US 5,579,454). Billyard discloses hidden surface processing at the projection of a three dimensional space constructed by using polygons on a two dimensional image. A list is made in which the forward and backward ordering of the polygons is described for each of the x, y, and z axes, and selecting the nearest axis to the viewing direction to determine the ordering of the list. But, at the locations cited by the examiner, Billyard does not teach or suggest that the lightness of the dummy object is drawn in a second lightness which is based on the lightness (i.e. the first lightness) of the object, as required by claim 6. Nor does this reference teach or suggest the limitation of generating a dummy object of said object by duplicating said object.


Thus, for at least these reasons, claim 6 is submitted to be patentably distinct from the teachings or suggestions of the combination of Miyamoto, Van Hook, and Billyard. Claim 7 is submitted to be patentably distinct for the same reasons as discussed above with respect to claim 6. That is, it is submitted that claim 7 is allowable over the cited prior art references for at least the reason that none of the cited references teaches or suggests generating a dummy object of said object by duplicating said object. Additionally, none of the art of record either alone or in combination teaches or suggests the limitations of claim 7 including that when the polygon projected into the pixel is a polygon forming said dummy object, the pixel is drawn in a second lightness different from a first lightness of the corresponding polygon of said object, the second lightness based on the first lightness.

Claims 11, 14, and 18 are submitted to be allowable for the same reasons as discussed above with respect to claim 6, while claims 12, 15, and 19 are submitted to be allowable for at least the same reasons as discussed above with respect to claim 7. For at least these reasons, applicants submit that claims 6-7, 11-12, 14-15, and 18-19 are allowable.

Conclusion:

Applicant believes that all pending claims are allowable and respectfully requests a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

Respectfully submitted,
BEYER WEAVER & THOMAS, LLP



Russell N. Swerdon
Reg. No. 36,943

P.O. Box 778
Berkeley, CA 94704-0778
(510) 843-6200